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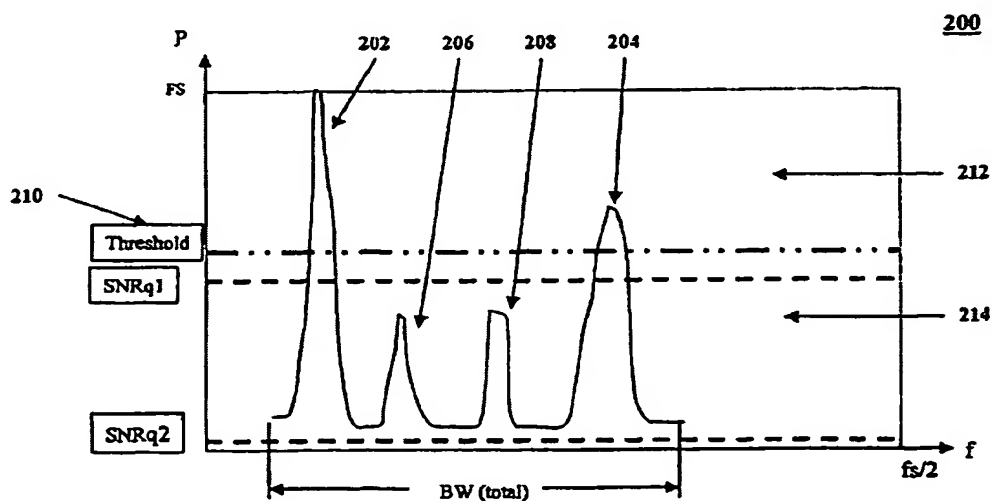
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(81) Designated States (unless otherwise indicated, for every
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(54) Title: DATA CONVERSION METHODS AND SYSTEMS



(57) Abstract: Methods and systems for implementing high-performance data converters remove analog technology bottlenecks and provide higher converter resolution and higher speed. A preferred embodiment of the method comprises the steps of transforming a time domain input signal into a frequency domain signal in a digital form, processing the frequency domain signal and the input signal using at least two lower-performance data converters in order to obtain at least two processed signals, and recombining the at least two processed signals to obtain a final output signal from the high-performance converter. Inventively and advantageously, the processing includes dividing the frequency domain into at least two frequency domain parts, one related to a low-resolution signal to noise ratio (SNR) and the other related to a high-resolution SNR, and using frequency information resulting from the division to obtain the at least two processed signals.

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PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
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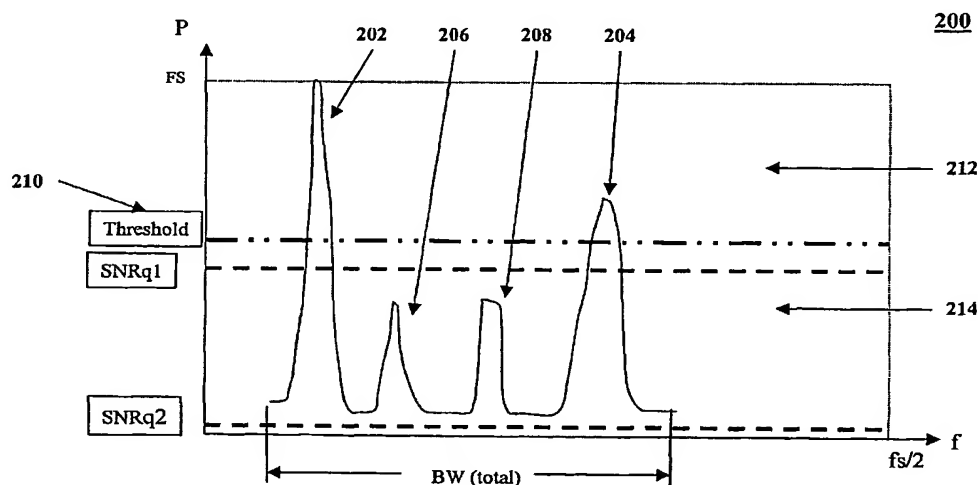
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WO 2005/017643 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL04/00757

A. CLASSIFICATION OF SUBJECT MATTER

IPC: H03M 1/06(2006.01)

USPC: 341/118

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 341/118; 341/120

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/0202460 A1 (Jung et al) 30 OCTOBER 2003 (30.10.2003), Paragraphs [0082] and [0087].	1-40



Further documents are listed in the continuation of Box C.



See patent family annex.

Special categories of cited documents:	
A document defining the general state of the art which is not considered to be of particular relevance	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
E earlier application or patent published on or after the international filing date	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
O document referring to an oral disclosure, use, exhibition or other means	*Z* document member of the same patent family
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

06 March 2006 (06.03.2006)

Date of mailing of the international search report

04 APR 2006

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

Joseph Lauture

Telephone No. 571.272.1805

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 3214-1	FOR FURTHER ACTION	See item 4 below
International application No. PCT/IL2004/000757	International filing date (<i>day/month/year</i>) 18 August 2004 (18.08.2004)	Priority date (<i>day/month/year</i>) 18 August 2003 (18.08.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant SPEEDARK LTD.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 740 14 35	Date of issuance of this report 24 April 2006 (24.04.2006) Authorized officer <div style="text-align: center; font-weight: bold; font-size: 1.2em;">Simin Baharlou</div> Telephone No. +41 22 338 71 30
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
MARK FRIEDMAN
7 JABOTINSKY ST.
RAMAT GAN, ISRAEL 52520

PCT

REC'D 06 APR 2006

WIPO

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) 04 APR 2006	
Applicant's or agent's file reference 3214-1	FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/IL04/00757	International filing date (day/month/year) 18 August 2004 (18.08.2004)
Priority date (day/month/year) 18 August 2003 (18.08.2003)	
International Patent Classification (IPC) or both national classification and IPC IPC: H03M 1/12(2006.01) USPC: 341/155	
Applicant BUNIN, HAIM	

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Date of completion of this opinion 04 March 2006 (04.03.2006)	Authorized officer <i>Phoncia fo. Bell</i> Joseph Lauture Telephone No. 571.272.1805
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Form PCT/ISA/237 (cover sheet) (April 2005)

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/IL04/00757

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in electronic form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/IL04/00757

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims NONE YES

Claims 1-40 NO

Inventive step (IS)

Claims NONE YES

Claims 1-40 NO

Industrial applicability (IA)

Claims NONE YES

Claims 1-40 NO

2. Citations and explanations:

the prior art of record fails to teach a high performance apparatus for data conversion having: a conversion unit that includes two lower-performance converters, each said converter having at least one lower performance parameter than the high performance apparatus, the conversion unit converting an input signal obtained in a time domain; a processing unit coupled to the conversion unit and processing frequency domain information extracted from the input signal, and providing with the conversion unit at least two processed signals that are recombined into a single high performance output signal.